BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

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Application of SAN DIEGO GAS & ELECTRIC COMPANY (U 902 E) for Approval of its Electric Vehicle-Grid Integration Pilot Program.	Application No. 14-04-014

JOINT MOTION FOR A NEW TRACK FOCUSED ON EV EDUCATION AND OUTREACH

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JOINT MOTION FOR A NEW TRACK FOCUSED ON EV EDUCATION AND OUTREACH

The Green Power Institute (GPI) and the Joint Minority Parties [1](JMP) (collectively "the Parties") respectfully submit this motion ("Joint Motion") to request that the Commission open a new track early in 2016 focused on education and outreach for increasing EV adoption.

The Green Power Institute is the renewable energy program of the Pacific Institute, a non-profit environmental and social advocacy group. Under the direction of Dr. Gregory Morris, the Green Power Institute performs research and provides advocacy on behalf of renewable energy systems and the contribution they make to reducing the environmental impacts of fossil-based energy systems. The Green Power Institute is located in Berkeley, California.

The Joint Minority Parties (JMP) consist of a coalition of community based organizations serving low-income minority communities throughout California and the nation. Members including minority business chambers of commerce, faith-based organizations, and non-profit organizations that provide grassroots services to thousands of underserved individuals and families.

I. Introduction

EV sales slowed down in 2015 in the U.S. and in California. Moreover, consumer acceptance of EVs, in terms of willingness to consider buying a new EV, has barely budged in the last two years, from 19 percent in 2013 to just 21 percent in

[1] The Joint Minority Parties represents members of the National Diversity Coalition, including the National Asian American Coalition, the Ecumenical Center for Black Church Studies, the Jesse Miranda Center for Hispanic Leadership, Christ Our Redeemer AME Church, National Hispanic Christian Leadership Conference, Orange County Interdenominational Alliance and the Los Angeles Latino Chamber Of Commerce.

2015, despite there being a dozen new models on the market and a sustained media focus on EVs, as well as very high levels of EV owner satisfaction.

This slowdown in sales is a very disconcerting trend for those concerned about climate change and fossil fuel dependence, and for the various state goals and mandates relating to zero emission vehicles. The Commission is obligated to think deeply about what it can do to get EV sales back on track. We offer what we believe are productive solutions in this motion.

The Parties have been generally supportive, with some caveats, of utility participation in installing a large number of charging stations around the state. We agree that the lack of sufficient charging stations is a barrier to higher EV adoption and this is a conclusion reached by every expert body, that we are aware of, that has been tasked with looking at this question. That said, the Parties have stated in various rounds of comments and briefs the view that insufficient education and outreach and the relatively high initial cost of many EVs are larger and more pervasive barriers to EV adoption than an insufficient number of charging stations. Now that the Commission is nearing the end of its adjudication of the utility EV pilot proposals the time is right for the Commission to open a new track dedicated to robust consideration of the suitable scope for E&O efforts.

SDG&E's EV pilot does not include any E&O beyond a nominal amount for reaching out to potential EV charging station site hosts. SCE and PG&E's EV pilot applications do consider E&O to some degree, and SCE's in particular calls out the need for robust E&O. However, these applications don't provide for E&O efforts on a scale that is even near adequate for the task before us; nor do they call for any third-party E&O efforts.

Accordingly, the Parties request that the Commission open a new track in this

proceeding to commence early in 2016, focused both on the appropriate scale and composition of the utility E&O programs as well as third-party E&O programs. We describe further below our reasoning and our recommendations.

II. Motion

a. EV sales have slowed down in 2015

EV sales in the U.S. slowed down in 2015 when compared to 2014 (figure 1). Sales through September of 2015 were just 82,404, compared to 92,640 through September in 2014. This is a very worrisome trend because in order to meet the state goals and mandates for EVs and low emission vehicles more generally we need to see a substantial rate of increase in EV sales every year—and definitely not a stagnation or, worse, a slowdown like we have seen so far in 2015.

Figure 1. *U.S. EV sales for 2015 and 2014 (source: www.insideevs.com).*

2015-US	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
Tesla Model S*	1,100	1,150	2,450	1,700	2,400	2,800	1,600	1,300	2,500				17,000
Nissan LEAF	1,070	1,198	1,817	1,553	2,104	2,074	1,174	1,393	1,247				13,630
Chevrolet Volt	542	693	639	905	1,618	1,225	1,313	1,380	949				9,264
BMW i3	670	1,089	922	406	818	551	935	792	1,710				7,893
Ford Fusion Energi	426	603	837	711	986	727	852	949	808				6,899
Ford C-Max Energi	395	498	715	553	715	667	693	723	719				5,678
Fiat 500e**	259	315	1,310	717	420	363	485	610	635				5,114
Toyota Prius PHV	401	397	473	428	727	464	584	344	216				4,034
VW e-Golf	181	130	195	309	410	293	313	381	343				2,555
Chevrolet Spark EV	86	119	151	920	283	226	57	135	157				2,134
Mercedes B-Class ED	240	109	145	158	278	242	196	172	147				1,687
BMW i8	85	113	143	138	117	137	217	210	182				1,342
Ford Focus Electric	85	145	140	124	165	152	135	176	145				1,267
smart ED	147	76	103	124	102	94	109	106	94				955
Cadillac ELR	92	127	92	104	116	62	66	45	36				740
Kia Soul EV	69	48	63	73	108	109	59	93	105				727
Porsche Cayenne S-E	66	71	72	88	105	88	77	83	70				720
Porsche Panamera S-E	61	40	44	30	21	34	23	36	41				330
Porsche 918 Spyder	34	14	10	28	20	29	40	22	4				201
Mitsubishi i-MiEV	3	2	10	16	18	23	12	6	3				93
Honda Accord PHV	28	12	5	5	5	4	1	2	0				62
Mercedes S550 PHV							10	10	17				37
Tesla Model X*									6				6
Volvo XC90								4	0				4
Other *	17	2	5	4	4	0	0	0	0				32
InsideEVs	6,057	6,951	10,341	9,094	11,540	10,364	8,951	8,972	10,134	0	0	0	82,404
2014 Results	5,680	7,341	9,650	8,895	12,362	12,363	11,242	12,172	10,921	9,739	9,646	13,038	123,049
Worldwide*	24,455	23,907	42,422	34,780	38,511	42,071	38,907	39,121					284,174

Part of the slowdown may be due to new Chevy Volt and Nissan Leaf models coming out, and hence some customers waiting for the new models, but there are also a number of new EVs on the market that should have been at least partially compensatory.[2]

California EV sales are generally 40-50 percent of U.S. sales and the California EV Collaborative (CEVC) estimates that California EVs on the road topped 150,000[3] this September, up from about 100,000 last September.[4] (No official records are released for California-only sales, unfortunately, requiring estimates based on

[2] Hybrid car sales for 2015 are also down about 17% nationally, suggesting that low gas prices have had a negative effect on green car purchases in general, including EVs. Source: http://www.hybridcars.com/september-2015-dashboard/.

[3] Online at: http://www.pevcollaborative.org/pev-sales-dashboard.

[4] Online at: http://www.latimes.com/business/autos/la-fi-hy-plug-in-electric-cars-sales-california-20140909-story.html.

U.S. sales figures). This is a 50 percent rate of growth, which is good, but indicative of a major slowdown in the previous growth rate, which was approximately 100 percent for 2012 and 2013.

Moreover, the Center for Sustainable Energy, which administers the California Vehicle Rebate Project (CVRP) for EVs (both BEVs and PHEVs), and fuel cell vehicles, shows only 123,407 rebates have been applied for to date,[5] which suggests that the number of EVs in CA may be substantially less than the 150,000 estimated by CEVC. (CEVC's estimate of 45 percent of U.S. EV sales occurring in California seems to be just a guess so it is more reliable to look to the CVRP data.) Certainly some EV owners may forgo the rebate application, but probably not very many choose to forgo the $2,500 rebate for BEVs and the $1,500 rebate for PHEVs. The same CVRP data shows that there were 33,955 rebate requests in 2015 through the end of September, compared to 34,485 requests for the same time period in 2014, again showing a slow down in EV sales for 2015. Figure 3 shows the annual sales in California since 2011, based on rebate applications, with the annual rate of growth. As can be seen, the rate of growth has slowed remarkably and gone negative in 2015.

Figure 3. *Annual EV sales in California, based on rebate applications (source: CVRP).*

	Annual sales	Rate of growth
2011	4,486	
2012	11,052	146.4%
2013	29,153	163.8%
2014	44,029	51.0%
2015*	33,955	-1.5%
* Through Sept.		

Regardless of what caused the slowdown in sales in 2015, it is clear that California is now behind the pace of growth in sales required to meet the 2025

[5] Online at https://cleanvehiclerebate.org/eng/rebate-statistics.

mandates for EVs that the governor set in Executive Order B-16-2012[6]. The 2025 mandate is for at least 1.5 million ZEVs to be on the road. SB 1275 also sets a goal for the state to place in service "at least" one million zero and near-zero-emission vehicles by Jan. 1, 2023, and in the same timeframe to create a "self-sustaining California market" for EVs and near-zero-emission vehicles. To meet these goals California needs to see a sustained increase in sales growth, and we are instead seeing a slowdown.

By the end of 2015, there will be an estimated 165,000 ZEVs in California total—a little more than 1/9th of the total required by 2025. We will need to see 1.335 million new EV sales by 2025, an average of 133,500 each year—far more than the 45,000 expected in 2015. The power of exponential growth suggests that the years between 2020 and 2025 will yield the most sales but it should be clear from this discussion that we have a lot of work to do to ensure that we meet the 1.5 million ZEV goal by 2025.

b. Polls show that lack of awareness of EV benefits is a major hurdle to EV adoption today

E&O is a highly significant barrier to greater EV adoption at this time, which is why we recommend that the Commission commence a new track focused on E&O, to start in early 2016. Numerous surveys and polls have been conducted of American and California car buyers with respect to EVs and all such polls find that the general awareness of the benefits and cost advantages of EVs is very low.

For example, an Indiana University survey at the end of 2013 found that 75 percent of nationwide respondents had limited to no knowledge of the benefits

[6] Online at: https://www.gov.ca.gov/news.php?id=17463.

of EVs.[7] And fully 95 percent did not know about state and local subsidies and rebates for EVs.

A 2013 survey by Navigant Consulting found that only 33 percent of all respondents were even aware of the existence of the Nissan Leaf, let alone the benefits of driving one of the many other types of EVs available today.[8] Navigant also found in the same survey that the "awareness of EVs other than the LEAF and Volt among survey respondents was less than 25%. Even with the Volt and LEAF, only 44% and 31% are extremely familiar or somewhat familiar with these vehicles, respectively."[9]

Moreover, interest in EVs hasn't changed very much in the last two years, according to an August, 2015, Harris Poll.[10] Only 21 percent of nationwide respondents said they would consider buying a pure EV, compared to 19 percent in the same 2013 poll.[11] Figures are a bit better but still bad for PHEVs: 29 percent in 2015 compared to 27 percent in 2013. This state of affairs reflects E&O failures on multiple levels, as is clear when we consider that a dozen or more new EVs and PHEVs have come on the market in the last two years, most EV owners love their vehicles and would buy and EV again as their next car, yet consumer acceptance of EVs has barely changed.

c. Expert and empirical support for the importance of E&O

Given this state of affairs, it is unsurprising that most experts agree that robust E&O efforts are required to change consumer acceptance. For example, a 2012

[7] Online at: http://news.indiana.edu/releases/iu/2013/11/electric-vehicle-survey.shtml.
[8] Cited by the CalETC report, discussed further below, and online at: http://evobsession.com/22-population-familiar-tesla-model-s-31-familiar-nissan-leaf/.
[9] The free white paper is available online at: https://www.navigantresearch.com/research/electric-vehicle-consumer-survey.
[10] This was a poll of 2,225 adults in the U.S. Online at http://www.theharrispoll.com/business/Interest-in-Electric-and-Hybrid-Vehicles.html.
[11] Respondents in the "West" were even worse at just 20 percent.

report jointly produced by the UCLA School of Law and the UC Berkeley School of Law, "Electric Drive by '25," found that lack of awareness of the benefits of EVs was the first of the three biggest obstacles to EV sales. The report recommends as its top priority to "develop a consistent and pervasive outreach campaign."

This report was produced three years ago, only a year and a half after the first mass-market EVs (the Chevy Volt and the Nissan Leaf) were introduced in the U.S. However, substantial additional research and expert opinion continues to support the view that E&O efforts could be a major boost to EV adoption, as well as the polls cited above.

The 2013 Governor's ZEV Action Plan[12] highlights E&O as the second most important hurdle to increased EV ownership, after completing the "needed infrastructure and planning" for EVs. The Action Plan states with respect to E&O: "Consumer awareness of ZEVs is limited. Many consumers are unaware that ZEVs are available for purchase or lease. Others don't fully understand ZEV benefits such as operational cost savings, availability of High Occupancy Vehicle (HOV) lanes on state freeways, accessible public charging and—in some places—free or reduced parking."

The 2014 California Transportation Electrification Assessment ("CalTEA") report, from ICF International, contains good discussion on the importance of E&O, worth quoting at length (pp. 59-60):

> Except for high-level messaging, there is a general lack of awareness of PEVs in the consumer market today. For instance,
>
> > • Navigant reports that the awareness of EVs other than the LEAF and Volt among survey respondents is less than 25%. Even with the Volt and LEAF, only 44% and 31% are extremely familiar or somewhat familiar with these vehicles, respectively.

[12] Online at http://opr.ca.gov/docs/Governor's_Office_ZEV_Action_Plan_(02-13).pdf.

• Disappointingly, the numbers from Navigant's 2013 survey are not too dissimilar from those reported in a 2010 survey by Ernst & Young. Ernst & Young found that 62% of respondents had never heard of PHEV technology or have heard of it but don't know what it is. Similarly, 40% of respondents have never heard of PEV technology or had heard of it but don't know what it was.

• Even in the San Francisco Bay Area, one of the top markets for EVs, a survey of City CarShare members showed that only 47% of respondents were very familiar or somewhat familiar with EVs. (Note: at the time, City CarShare only had about 10 PEVs in its fleet). Other responses to the survey indicate that consumers may not be as familiar with PEVs as these surveys indicate. For instance, respondents were asked to identify specific PEV model names. Despite 84% of respondents saying they considered themselves at least "slightly familiar" with PEVs, nearly 20% of respondents identified a vehicle that was neither a BEV nor a PHEV. Rather, the respondents regularly identified an HEV (e.g., Toyota Prius) or a small fuel efficient car such as the SmartCar.

Perhaps the most authoritative report on this issue was published in April of 2015. The National Research Council, the research arm of the National Academy of Science, produced the report, "Overcoming Barriers to Deployment of Plug-in Electric Vehicles" ("NRC report"). The NRC report prioritizes education and outreach toward the top of its recommendations. The report is worth quoting at length on this issue (NRC report, p. 3, emphasis added):

> The purchase of a new vehicle is typically a lengthy process that often involves substantial research and is strongly affected by consumer perceptions. In evaluating the purchase process for PEVs specifically, the committee identified several barriers—in addition to the cost differences between PEVs and ICE vehicles—that affect consumer perceptions and their decision process and ultimately (negatively) their purchase decisions. The barriers include the limited variety of PEVs available; misunderstandings concerning the range of the various PEVs; difficulties in understanding electricity consumption, calculating fuel costs, and determining charging infrastructure needs; complexities of installing home charging; difficulties in determining the greenness of the vehicle; lack of information on incentives; and lack of knowledge

> of unique PEV benefits. Collectively, the identified barriers indicate that consumer awareness and knowledge of PEV offerings, incentives, and features are not as great as needed to make fully informed decisions about whether to purchase a PEV. Furthermore, many factors contribute to consumer uncertainty and doubt about the viability of PEVs and create a perceptual hurdle that negatively affects PEV purchases. Together, the barriers emphasize the need for better consumer information and education that can answer all their questions. Consumers have traditionally relied on dealers to provide vehicle information; however, in spite of education efforts by some manufacturers, dealer knowledge of PEVs has been uneven and often insufficient to address consumer questions and concerns. The committee does acknowledge, however, that even well-informed consumers might not buy a PEV because it does not meet some of their basic requirements for a vehicle (that is, consumer information and education cannot overcome the absence of features desired by a consumer).

This quote itemizes a number of the educational barriers to greater EV adoption, but this is far from an exhaustive list. For those who follow the EV market closely, like the parties to this proceeding, the benefits and details of EVs are well-known, but for the large majority of the buying public the welter of details and options, charging capabilities, driving range, and cold weather issues, etc., that are involved in buying and owning an EV can simply be overwhelming.

The NRC Report adds (p. 7): "A significant body of research, however, demonstrates that having the right technology (with a compelling value proposition) is still insufficient to achieve success in the market. That technology must be complemented with a planned strategy to create market awareness and to overcome customer fear, uncertainty, and doubt about the technology." Our purpose with this motion is for the Commission to step up and create, with stakeholder and IOU help, just such a "planned strategy."

d. What robust E&O efforts could achieve

The Center for Sustainable Energy is the statewide manager for all EV rebates (funded by the Energy Commission). CSE also collects various survey information on customers who apply for rebates. While CSE hasn't conducted research specifically on the degree to which various E&O efforts influence consumer adoption of EVs, they have surveyed applicants for the decision factors that resulted in their EV purchase. Figure 4 shows the survey results.

Figure 4. *Decision factors for California EV rebate applicants to buy an EV (source: http://energycenter.org/clean-vehicle-rebate-project/survey-dashboard.)*

Most important decision factor	%
Saving money on fuel costs	37%
Reducing environmental impacts	22%
HOV lane access	16%
Increased energy independence	6%
A desire for newest technology	5%
Vehicle performance	5%
Supporting the diffusion of EV tech	5%
Other	4%

Seeing that, for example, the top three decision factors for buying an EV are saving money on fuel costs, reducing environmental impacts and increased HOV lane access allows statewide E&O efforts to tailor their messages best. CSE also contains regional survey information rather than just aggregated statewide information, allowing further refinement in E&O efforts for specific areas of California.

We also know that satisfaction with their EV is very high for most EV owners. A

www.greencarreports.com article[13] summarized some relevant surveys:

> General Motors has said the Chevrolet Volt, launched in December 2010, has the highest satisfaction scores it has seen on any vehicle it's ever built. And *Consumer Reports* confirmed the high satisfaction in its own survey, with the Volt topping its fall 2012 satisfaction index.
>
> Same for the Nissan Leaf: Nissan CEO Carlos Ghosn said the car has the highest owner-satisfaction survey results Nissan's seen since it began asking owners their opinions.
>
> In France, Nissan's alliance partner Renault got the same result for the Zoe battery-electric subcompact it launched a little more than a year ago (a car not sold in North America).
>
> Then, late last year, the Tesla Model S knocked the Volt off the top of the *Consumer Reports* chart. The magazine said the electric luxury sedan had some of the highest owner satisfaction ratings it had ever seen.

While we have not been able to find any studies specifically assessing the degree to which E&O efforts are linked to increased EV adoption, we can put together a good empirical case based on the above data, in the following manner: 1) EV purchasers are strongly motivated by a proper understanding of the financial benefits of owning an EV; 2) a large proportion of EV owners buy EVs because they are aware of non-financial benefits, including reducing environmental impacts, increased HOV lane access and increased energy independence; 3) EV owners generally have very high satisfaction with their EVs. Accordingly, spreading awareness of these issues through robust state-wide E&O programs should result in a strong boost in EV adoption. In other words, a number of economical and quality EVs and PHEVs are here today, with many more such models coming out in the next few years, so the technology is viable already and a major hurdle facing increased EV adoption seems to be the lack of robust E&O efforts.

[13] http://www.greencarreports.com/news/1090615_heres-why-electric-cars-will-succeed-owners-just-adore-them.

For these reasons, a massive E&O effort is required to clear these hurdles. While SCE's E&O efforts described above are surely a step in the right direction, they are not adequate to the task before us in terms of dramatically ramping up EV adoption in the coming years in order to meet the Governor's 2025 goal and various state legal mandates, including SB 1275's Charge Ahead requirement of 1 million ZEVs and LEVs on the road by 2023.

e. Procedural history

The Commission scoped E&O issues for Phase 1 of this proceeding in its July 2014 scoping memo as follows (p. 9, emphasis added):

> In regards to customer education and outreach, the utilities are currently authorized by D.11-07-029 to provide information to customers on the availability, cost, and environmental impacts of electric vehicles as well as the available metering options, rate plans, and charging options before they make their service selections. D.11-07-029 also adopted guidelines to define the scope of the utilities' role in education and outreach.
>
> In the instant proceeding, ORA and others commented on the need for better information and education dissemination by the utilities. Phase 1 will take comment on near-term, low cost solutions to accelerate the electric vehicle market including the education and outreach needs to support further electric vehicle adoption. It will be important to hear whether existing resources are available for education and outreach activities and what additional resources may be needed.

The same document lists in its statement of issues the following (p. 14, emphasis added): "What education and outreach activities must the utilities provide to support further customer PEV adoption? What existing resources are available for these activities and what additional resources are needed?" The joint parties are seeking the Commission's renewed focus on E&O issues, for third party efforts as well as for utility efforts.

Despite this early scoping in this proceeding, no comment opportunity has been offered to date, other than in the context of commenting more generally on the

IOU pilot applications, which doesn't seem to be what the Commission meant in this scoping memo. Moreover, the Commission issued a new ruling and scoping memo shortly after the July 2014 scoping memo, on September 29, 2014, that consolidated SDG&E's pilot application with R.13-11-007 and there was no mention of E&O in the new scoping memo. There has been no opportunity to comment on the E&O issues, and nor have any Commission decisions or rulings weighed in on E&O issues since.

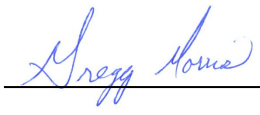
The Integrated Distributed Energy Resources proceeding (R.14-10-003) and related applications are currently considering the utility applications for E&O in the broader context of DER. However, these applications deal strictly with IOU E&O activities as presented and a key objective of the present motion is to highlight the need for and the potential for third-party E&O on EVs. Accordingly, opening a new track in the present proceeding is a highly important component of the state's obligations to promote EV adoption.

III. Conclusion

For the above reasons, we urge the Commission to open a new track in early 2016 focused on E&O.

Respectfully Submitted,

December 2, 2015



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